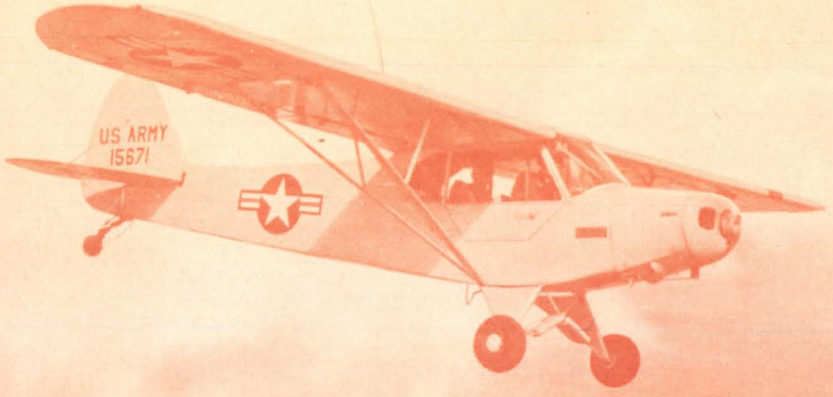
ARMY AVIATION DIGEST



ARMY AVIATION SCHOOL
CAMP RUCKER, ALABAMA

MARCH 1955 VOLUME 1 NUMBER 2

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
01 MAR 1955	**N/A**	**-**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Army Aviation Digest Volume 1 Number 2	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
Carver, Weyman S. (editor) Hutton, Carl L. Byrne, William H. Smith, James C. Baker, S.K.	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Army Aviation School**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution unlimited

13. SUPPLEMENTARY NOTES
Cubs in Combat ; Medication and Flying ; Bell Model 47-J ; Centralized Operations ; Operation Emergency; Engine Ice and Air ; Grey Hare Says, The original document contains color images.

14. ABSTRACT
The ARMY AVIATION DIGEST is an official publication of the Department of the Army published monthly under the supervision of the Commandant, Army Aviation School. The mission of the ARMY AVIATION DIGEST is to provide information of an operational or functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine, and other related data.

15. SUBJECT TERMS
Army Aviation History

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**UU**	**36**	

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ARMY AVIATION
DIGEST

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ARMY AVIATION SCHOOL

LIBRARY—MUSEUM

The Army Aviation School Library and Museum have recently been opened at Camp Rucker, Alabama. All types of material including after-action reports of operations in which Army aviation was involved, personal reminiscenses, and any other information which will help piece together a history of Army aviation are desired for the library. Objects which have played a role in the history of Army aviation are also desired for the Army Aviation School Museum. Objects which are sent to the museum should have an accompanying description of the part which they played in the development of Army aviation. Inquiries concerning the library or museum should be addressed to the Custodian, ARMAV Library, or to the Custodian, ARMAV Museum, Camp Rucker, Alabama.

CUBS IN COMBAT

Brigadier General Carl I. Hutton, *USA*

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or of the Army Aviation School.—The Editor.

"The following are extracts from a memoir entitled 'An Armored Artillery Commander,' written specifically to be placed in the Artillery School Library, Fort Sill, Oklahoma. They are perhaps largely of academic interest, but they do pertain to one man's recollections of, and opinions about, the operations of Army airplanes in combat. We have too little of such material.

"Every war has its own circumstances. The Western European campaigns in World War II were fought against an enemy who was heavily engaged on two other land fronts and who had suffered severe defeats on both. He was no longer a first class fighting power. General lessons about combat must be tempered with knowledge of the particular situation."—*Author.*

14th Armored FA Battalion
1944

June 14th marked the entry into combat of our air OP's. These had been on the Division Artillery airstrip since they flew across the channel in formation, guided by an air force airplane. Since there had been fairly low clouds the day of the movement to Carentan, somebody at the division artillery airstrip decided our airplanes could not join us. This was one of the characteristic mistakes which occurs when the airplanes are under the control of someone other than the man who is going to use them. If the airplanes had been with us for the second attack on the afternoon of the thirteenth, it might have been possible to have detected any rearward movement of the enemy after he had felt the full force of the attack. On the fourteenth the air observers had fine shooting, especially since the Germans were not yet accustomed to seeing the airplanes in the air, and measuring their effectiveness by the artillery fire which fell

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upon them when they exposed themselves. At any rate, from this time on I struggled to have my airplanes with me, although not always with success . . .

June 17: The air OP's had proven their effectiveness and their ability to observe counterbattery fire, as well as to detect other targets in the Bocage country . . .

July 3: (Diary Entry) "Thank God for the Cubs. Keep Jerry down."

July 1–18: (Caumont) Our air OP's were again proving their worth. The air section located their landing strip perhaps a mile in rear of the command post. Because of the conformation of the front, however, (we occupied the front left-hand corner of a sharp salient) they were not very far from the enemy. In spite of low approaches which they made to the landing field, they were occasionally shelled. On one occasion, Lieutenant Fein and Sergeant Pechar, becoming irritated at this discourtesy, took off under shell fire and did some fine shooting back. The good which the airplanes did was not limited to the negative benefit of holding down hostile fire. Again and again they proved their worth in locating hostile guns. At dusk, this was especially easy since the flashes of the guns were very distinct . . .

July 4: I flew an air mission over the front to check on the work of the observers. After seeing the enemy side of the lines from the air, I tended to put more faith than ever in the air OP's.

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Upon graduation from USMA in 1930 he was assigned to the field artillery branch for six years of troop duty. From 1936 to 1942 he served in the Quartermaster Corps. In 1943 he returned to the field artillery to command the 96th Armored Field Artillery Battalion. In March, 1944 he was transferred to the command of the 14th Armored Field Artillery Battalion which entered combat in Europe a short time later. In August of 1944 he became Commanding Officer of the 2d Armored Division Artillery, a command which he held until September, 1946. It is about the period March, 1944 to September, 1946 that he writes in this article.—Editor.

They were really looking right down the enemy's throat. No big movement could have taken place close to the enemy lines in the

daytime without it being detected from the air. After repeated missions over the same front, the observers became so familiar with the front that adjustments on targets were frequently unnecessary. They could tell the coordinates with remarkable exactness . . .

July 5: (Diary Entry) "Good air observation from 2200 to 2300 . . ."

July 18–19: An incident during the relief from the Caumont front convinced me that my demands for full control of my airplanes were justified. The whole relief was an echeloned affair, with the 14th Field Artillery moving out last. Division artillery moved out during the day and the air officer took my air section with him. Although this was simply a misunderstanding, it demonstrated the possibility of a misunderstanding, and I of course did not fail to point out to Colonel Roberts that I did not like it. He agreed, and always from then until his death, made a point of letting me have my own airplanes . . .

July 25: (St. Lo Breakthrough) The air OP's were to operate independently under each battalion commander since we were again limited by the lack of interchangeability of the radios . . .

July 26—August 1: (Tessy-Sur-Vire) The air OP's in this fight gave us about the only real observed fire we had. The forward observers were hemmed in by the trees and hedgerows and could not see beyond their immediate front. The German artillery was behind the ridge and with observation all along the line of our attack. The air observers did a fine job, in spite of almost constant sniping at them by 88mm antiaircraft guns. On one occasion we managed to save General Rose, who was pinned down by artillery fire, by the efforts of Lieutenant Fein and Sergeant Pechar. Toward dusk on this day, they were having wonderful shooting at the hostile artillery, but they reported they were about out of gasoline, and would have to come down. Of course, I told them to stay up and keep up the shooting. Finally, it got too dark for them to see, and they headed for the airstrip. They ran out of gasoline on their final approach, and had to make a night forced landing.

During part of the battle, Captain Dyson was acting as observer with the 1st Battalion, 66th. He switched his radio to the battalion air channel, and by talking back and forth with the air observer, managed to get effective fire on his front. As far as I know, this was the first time this obvious and effective coordination between the air OP's and forward observers was used. It was an excellent scheme. It had the disadvantage of focusing the attention of the air observer on this small part of the front to the exclusion of the others. It

worked out so well that we soon started the same system with all of our observers, under the control of the S–3, to prevent one observer from hogging all of the observation . . .

2d Armored Division Artillery

August 9: Major Gordon, my air officer, and a division observer were injured when their L–5 flew through the tops of some trees in an attempted take-off. I appointed Captain Mahon, an Air Force rated observer, to be air officer. Although this was unusual to have a non-pilot as air officer, I never had occasion to regret the decision . . . Mahon always did a very fine job . . .

August 10–11: One of the 62d Field Artillery light airplanes, in flying back to its former area to pick up some equipment left there, made the mistake of repeating a route which he had flown the day before. He disappeared and, only later, we learned that he had been shot down by light antiaircraft fire from the ground. He survived and was liberated in a hospital in Paris.

August 1944: There were very few changes in policies. One, however, I made in regard to the air OP's. I was willing to have the unit air sections bed down on the division artillery airstrip, but I preferred that the battalion commanders assume full control. At any rate, whether they were on my strip or not, the battalion commanders were to be responsible for them. As habits developed, the 14th and 65th kept their sections on a separate field. Division artillery and the 92d habitually kept their airplanes on the division artillery strip. This arrangement arose quite naturally, since the poker players were pretty much concentrated in these two air sections. The 78th moved back and forth, sometimes with us and sometimes on unit strips. In spite of all the talk which was and is going on about "centralized control" of the airplanes, I still believe that they are furnished to the battalion commander to assist him in the accomplishment of his mission, and they should not be taken from him without cogent reasons. The system which we finally developed was about as follows: The 14th and 65th habitually supported CC "A", and they pooled their four airplanes to assure full time air observation. The 78th and 62d habitually supported CC "B" and they pooled their four airplanes. Division artillery, the 92d, and the 258th pooled their airplanes for general support missions. When the situation stabilized, the division artillery air officer made out a schedule of hourly flights, among all of the airplanes in the artillery. The aircraft relieved each other in the air on these mis-

sions, and therefore it made no difference whether they were on the same strip or not . . .

August 24: (Elbeuf) During this day, I was attempting to observe from the air, and I could see and hear the shells bursting among the tanks below me. But the artillery doing the shooting was well hidden, or at least I could not pick it up . . .

August 26: (Seine) A massed group of about 400 German vehicles was detected by Lieutenant Moyer from an air OP. They were hub to hub, waiting their turn to be ferried over the river. Moyer begged, prayed, cursed, and screamed through the whole gamut of the fire request lexicon. It didn't do any good since they were out of our range and in the Canadian sector besides. We had to tell Moyer to come down to keep him from having apoplexy . . .

September 1: (Belgium) The 14th Field Artillery supported that attack on this column, and all of the while there was a hue and cry, "Where are the Cubs?" There was a high wind on the ground, and above the tree tops, the velocity must have reached sixty miles per hour. The air OP's were valiantly struggling (against the wind) to get into the flight, when one of them discovered what he estimated as a battalion of German infantry attempting to escape to the northeast. The 14th swung around 3200 mils and took this new target under fire. The Germans were caught in the open, and suffered terrible losses under this accurately directed fire . . .

September 1944: (Belgium) Again on the 7th we had to wait for gasoline. The Reconnaissance Battalion, however, had patrols out as far as twenty miles to our front. The division artillery air OP's were working with these patrols. Captain Mahon as observer and Sergeant Welsh as pilot on this work had an experience which changed rapidly from fun to ludicrousness. They were working with an armored car section when they discovered about a company of enemy infantry attempting to seek cover in a woods. Mahon radioed this information to the armored cars, who immediately started forward to round up the catch. It became apparent to Mahon that the Germans would escape into the woods, and probably for good, unless they were delayed. He therefore staged a strafing attack, firing at the troops on the ground with his submachine gun, and even dropping hand grenades in their midst. This was fun and very exciting, and the Germans stopped at each pass to hit the ground or to fire back. On one pass, however, somebody, either Mahon or the Germans, shot the propeller off the Cub, and the situation rapidly deteriorated out of the realm of strategic air warfare. The only field available for the forced landing was the one which the

Germans were dominating through occupation. Welsh made the landing. Just as the Germans were descending upon them in order to exact their pound of flesh, the armored cars arrived and saved the day for the allied nations . . .

September 16: (Holland) The air OP's reported more enemy artillery in the area than they had yet seen . . .

October 2: (Ubach, Germany) We were given the mission of counter-antiaircraft fire during the preparation bombing by the medium bombers. Air OP's were to fly surveillance missions, taking under fire any antiaircraft guns which opened up . . .

October 6: Despite the heavy flak, our air OP's were doing a wonderful job, especially in counterbattery, since their command of the terrain ruined all defilade . . .

October—November: Our air OP's received concentrated and accurate 88mm flak constantly in this area, yet we did not lose a single airplane. There was a flak battery to the north of us, in prolongation of the Geilenkirchen-Ubach Road. When we crossed this road going east or west, we could expect flak. All of the pilots soon became accustomed to the gauntlet and they would approach it doing something different—diving, climbing, twisting, or turning. When the weather was good, the observers could see Cologne and Aachen, and if they could fly at all, they could see all of the enemy artillery on our front. This artillery was well dug in and very hard to silence. Adjustments had been made repeatedly on most of the positions, and the observers would call in something like this: "That 095362 battery just fired again. Do you want to do anything about it?" Depending upon the status of ammunition expenditure, we might or might not engage the target. Invariably, if we did shoot at it, the battery would stop firing while the gun crews returned to their shelters. Therefore, the results of such shooting were largely negative.

October 16: (Ubach) Captain Stone was our liaison officer from XIX Corps Artillery. He was an ambitious officer, and every day or two he would return to Corps, and using one of their airplanes, he would fly a mission in our sector. On the 16th, Captain Stone was flying such a mission in an L–5 with Major Hatch, XIX Corps Artillery air officer, as pilot. The airplane was shot down by a flight of 4 ME 109's, which came in on the deck and made one upward pass, and both Hatch and Stone were killed. This was the type of fighter attack which the Luftwaffe used extensively later on, with some result . . .

November 16: (Seigfried Line) In preparation for the at-

tack our air OP's took oblique photographs of the terrain. These were reproduced in quantity and distributed in sufficient numbers to provide one set of photos for each platoon leader. The theory was that the oblique could be marked and used as a map. I do not know whether the platoon leaders actually used these photos, but the idea is a good one to be remembered for future use, especially in poorly mapped country . . .

December 23: (Bulge) At about 1600, Captain Mahon, in an air OP was investigating the Leignon-Dinant area when he discovered German armor in some woods southwest of the hamlet of Liroux. A British 11th Armored Division reconnaissance troop had an outpost about 1,000 yards from the Germans, and along the Ciney–Dinant Road. The air OP landed by this patrol and warned them of the presence of the enemy.

December 25: (Bulge) The fighting around Celles was naturally somewhat confusing. Lieutenant Moyer, as observer in an air OP, was observing a mission in this area. He was adjusting fire on the surrounded reconnaissance and artillery elements. He could see our tanks beyond the target. When the Typhoons peeled off for their attack, Moyer and Welsh assumed they were attacking our tanks instead of the enemy. They decided to fly in front of the Typhoons in order to divert the attack. They had done this several other times, and thus prevented misdirected attacks by our fighter–bombers upon our own people. This time, much to their surprise, they found themselves in the midst of quite an air-ground battle. The enemy was firing 20mm's, and the Typhoons were firing rockets. Our air OP retired in confusion to look over the situation and Moyer admitted for once the Air Force had been right while the air OP had been wrong . . .

1945

March 2: (Germany) A counterattack in force was reported coming across the Erft Canal in the Grevenbroich area. This was miles behind our leading elements, and we sent an air OP back to investigate. It happened that Lieutenants Kistler and Moyer were the crew of this air OP, and they had an opportunity to indulge their specialty of interposing themselves between our fighter-bombers in the air and our troops on the ground. According to Moyer, the P–47's knocked out five enemy tanks and six of ours. A picture of this action appeared in an issue of LIFE with the caption that an American column shown on fire had been destroyed by the enemy. They were, in fact, destroyed by our own fighter-bombers . . .

March: (Rhine River) The Luftwaffe, in this area for the first time, made an organized attack upon our air OP's. Although I cannot verify the figure, I remember eleven as the number of air OP's which were shot down in Ninth US Army by these attacks in less than a week. Compared with the number of light aircraft which were concentrated in the area, this number is insignificant. One of our own aircraft was shot down, wounding both the pilot and the observer, and we had an accurate description of the method of attack. Lieutenant Reid, pilot, and Lieutenant Middleton, observer, were on a routine mission, patrolling the front of the 113th Cavalry Group on March 17th. The first they knew of their being attacked was when 20mm tracers struck their Cub, coming from below and behind. Reid proceeded to make a crash landing. Four ME 109's had made the pass from across the Rhine at about fifty feet altitude. After the crash, the enemy fighters strafed the crashed plane on the ground. Two of these fighters were shot down by our AA fire while trying to escape.

An isolated attack of this kind could be attributed to chance. In connection with the other attacks along the Ninth Army Front, however, the element of chance in such precise attacks can be disregarded. It is obvious that the fighters were directed to their target by some control method which enabled them to cross the Rhine at very low altitude and at the exact time which would allow them to make the attack from below and to the rear. Any number of methods could be employed effectively for arrangement, from radar direction to simple visual observation by a concealed observer on the ground, and radio contact with the fighter flight in the air. The boldness and the unconcern of the air OP personnel, growing out of the months of safety, contributed to the success of the enemy scheme. Variations of pattern, course, altitude, and speed would lessen the chance of a fighter attack being able to stalk the flight without being seen . . .

March 31: (Across the Rhine) We began to have a seige of losses in our air OP's. We were many miles ahead of other troops in our vicinity, and the Cubs had no protection except when they were immediately over the columns. The enemy fighters downed one almost every day for a while. The exploit of Lieutenant Emerick and Captain Mahon near Ahlen demonstrates the safety of the Cub-type airplane. They were attacked by twelve ME 109's. One flight made a pass at them on the way down, and when they arrived on the deck, the twelve were coming at them from the rear in line abreast. If they continued straight ahead, the flight immediately in rear would

get a shot at them, while if they turned in either direction they would come under fire of the flights to either side. They were flying just above some small pine trees and Emerick dipped his wing into the trees. The airplane snapped over and crashed on its back. Emerick and Mahon scrambled out and hid in an irrigation ditch while the fighters strafed the crashed plane. After the fighters left, they recovered their radio and walked across country a mile to join the column. On the way, incidentally, they picked up a German machine gun crew as prisoners.

This escape was partially miraculous, and partially attributable to the L–4. It was simple, light, and slow. There were no gadgets for the pilot to work and no problems of speed control such as there would have been if the pilot had had to work flaps. The terminal velocity of its dive was low enough so that there was no problem of killing off a lot of extra air speed near the ground. Such an escape in an L–5 would have been almost impossible. As it was, Emerick and Mahon were flying again the next day, although Mahon did complain of a stiff neck . . .

April 2: (Elbe River) The weather prevented observation by either air or ground OP's. Although on the surface the day appeared to be clear, actually there was a strong inversion with the usual accompanying haze and our observation was simply ineffective. It was a day of frustration and desperation. The air OP's flew out farther and farther in efforts to suppress the hostile fire, but they did not succeed . . .

Lessons of War

Therefore, the first lesson of World War II was that our artillery doctrines are sound. The fire direction center, the air OP's, the forward observers, and the plans of massing artillery fire were developed before the war step by step with the development of communication equipment . . .

It is a foregone conclusion that air observation will always be necessary on the battlefield. The air OP's of the last war did a remarkable job and an air OP will be required in the next war. If antiaircraft developments force the abandonment of the commercial-type light aircraft, some other solutions will be required. The ultimate in this would be a standard fighter, but it is hoped that this solution will not be necessary since it will remove the very essential close control and coordination of employment by the battalion commander . . .

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MEDICATION AND FLYING

Colonel William H. Byrne, *Medical Corps*

The views expressed in this article are the author's and are not necessarily those of the Department of The Army or of the Army Aviation School.—The Editor.

The safest measure to follow in regard to medical treatment and flying is to consult a flight surgeon and adhere to his recommendations. In view of the limited number of Aviation Medical Officers in the Army, the following data is offered as a second best safety measure.

First, let us clear up a point pertaining to the word DRUGS. This is a general term used to cover many forms of medicines, including NARCOTICS. In other words, "all drugs are not narcotics but all narcotics are drugs". Therefore, do not think you are being doped when you receive drugs in the form of medication. On the other hand, do learn some of the characteristics of certain drugs and the unfavorable reactions they produce in the flier. Furthermore, you should restrict your flying when under treatment with unknown medication or the following drugs:

Alcohol: Alcohol in the human has the unfavorable reaction of depressing the higher cortical (brain) centers, with varying degrees of effect, including impaired coordination, reaction time, visual acuity, planning and judgment; all of which are essential to safe flying. Do not pilot an aircraft within twelve hours after the ingestion of any amount of alcoholic beverage. If the amount is equivalent to more than two ounces of alcohol, then do not pilot an aircraft for twenty-four hours following the last drink. Remember, bonded bourbon whisky is 100 proof or 50 percent alcohol.

Antihistaminics: Drugs of this group that are most available to military personnel are benadryl and pryabenzamine. The favorable reaction of these drugs is that of shrinking and somewhat drying the mucous membrane lining of the nose and sinuses, and are therefore excellent in the treatment of sinusitis and allergic disorders. The unfavorable reaction of these drugs is that of sedation, with varying degrees of drowsiness and decreased reaction time, as well

as occasional disturbances of equilibrium. Do not pilot an aircraft within eight hours of a single dose of these drugs.

Aspirin and APC preparations: These drugs are coal tar derivatives, and in the susceptible individual or in prolonged usage will produce a depressing effect on certain blood forming elements, which leads to abnormal white blood cell activity and a decrease in resistance to infections. Do not practice self-medication! Do not take more than two tablets of aspirin or APC per day for more than two successive days unless under treatment by a physician.

Antibiotics: These preparations do not offer any contraindication to flying unless there is an immediate (anaphylactic) severe shock type of reaction within fifteen minutes or a delayed reaction after many days or weeks. The latter reaction is usually manifested by intense itching of the skin as well as pain and swelling of joints.

Barbiturates: This group contains such prominent drugs as phenobarbital, amytal, nembutal, and seconal. The principal reactions produced by these drugs are relaxation, sedation (drowsiness), and sleep in the absence of severe pain. Furthermore, these are excessively habit forming drugs. The resultant decrease in reaction time and power of judgment contraindicates the use of these drugs by flying personnel when flying. Do not pilot an aircraft within twelve hours of a single tablet or capsule dose of the above drugs.

Benzedrine: This drug has been removed from the market because of its habit forming qualities. Benzedrine is a powerful stimulant and in the presence of good reserve power in the body, it will counteract sedation and sleep. In the absence of this body reserve, benzedrine produces a depressing effect similar to the barbiturates. This drug also produces a shrinking of the mucous mem-

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branes in the nose and sinuses, which is the primary desirable effect in aviation medicine. This desirable property has been developed in the preparation, Benzedrex, which is not habit forming and has replaced benzedrine. Therefore, there is no contraindication to using the Benzedrex inhaler occasionally during flight.

Diarrhea Mixtures: The reason for mentioning these preparations is that they usually contain an opium preparation combined with one of the barbiturates. The ill effects of diarrhea plus the decrease in reaction time and judgment, secondary to the above drugs, contraindicates flying while under such treatment. Do not pilot an aircraft within eight hours of a single dose of a diarrhea mixture.

Immunization: The various biological immunizing agents produce varying degrees of local tissue reaction and generalized systemic reactions. The latter definitely reduces reaction time and judgment of the individual. Do not pilot an aircraft within twenty-four hours of receiving any single immunization, be it the basic series or a stimulating dose.

Motion Sickness Drugs: These preparations all produce some degree of sedation which is not compatible with flying. Do not pilot an aircraft within eight hours of taking a single dose of any motion sickness drug, "Mothersills" included.

Local or Block Anesthesia for tooth extractions or minor surgery: When the anesthesia wears off and disappears, there is a return or development of pain. This is distracting to varying degrees and is not compatible with flying. Do not pilot an aircraft within twenty-four hours of the above treatment.

Sulfonamides: All sulfa drugs produce similar unfavorable reactions in the human body, the main difference being one of degree. The principal untoward reaction is depressing the blood forming elements with a resultant anemia and/or lowered white blood cell activity. This leads to visual disturbances, vertigo, impaired coordination and reaction time, weakness and lowered resistance to infection. These manifestations are not compatible with flying duty and one should not pilot an aircraft for a minimum of forty-eight hours following the last dose of any sulfa drug. One of the most important steps to be taken during sulfa administration is to consume at least three quarts of fluids daily. Absolute abstinence from alcohol should be maintained.

The above presentation is made in the interest of preserving life, limb, and material. (*Continued on page 33*)

CENTRALIZED OPERATIONS

Captain James C. Smith, *Armor*

The views expressed in this article are the author's and are not necessarily those of the Department of The Army or of the Army Aviation School.—The Editor.

Centralized operations of Army aviation have recently been the subject of many discussions which have brought out numerous differences of opinion. These differences are based primarily on the changes in the organization of the division organic aviation. The present division organization authorizes one observation aircraft and one helicopter to each regiment, two observation aircraft to each artillery battalion, and twelve other aircraft of mixed types allocated to five other units. The aviation company contains all of the division organic aviation in one supporting unit at division level.

Many who are firmly against the idea of centralizing light aircraft operations are not aware of aviation's tactical capabilities when utilizing this system of operation. In turn, there are many aviation officers who understand and realize the values of centralized operations *only* from the aviation viewpoint. This forms the basis for most of the misunderstanding concerning the centralizing of aviation operations. Such a controversial subject requires a thorough knowledge of both the aviation commander's viewpoint and that of the line commander. This article is written in an effort to eliminate this misunderstanding by increasing the individual's knowledge of tactical Army aviation in the support of the ground arms.

Initial Centralization

The idea of centralized operations is certainly not a new one. It has existed in the minds of many as early as World War II, but since only artillery units had organic Army aviation during that period the problems were not widely known. At the end of World War II, and as a result of the lessons learned during that war, Army aviation sections were included in the revised organization tables of

most of the arms and services. This brought aviation into a different focus, and many commanders became more interested in the tactical employment of their organic aviation. This interest was necessarily limited to some degree until the advent of the Korean War because of the reduction in the number of large scale maneuvers. At the outbreak of the Korean War, the value of the Army aircraft was again recognized even though there had been very little development of tactical doctrine between wars, and the difficulties inherent to small unit operation of aviation sections became pronounced in the early days of this new conflict. These, of course, were the same problems confronted by the artillery aviation sections of World War II, the same deficiencies which served to limit the development of the tactical potential of aviation support.

In order to provide the best possible support, most of the divisions in Korea combined their aviation sections on a common airstrip under the supervision of the division aviation officer. Each unit still retained command control of its organic aviation sections with few exceptions. A primary exception was the grouping of the artillery battalion sections under the division artillery aviation officer. However, this grouping in the early phases of the war was only the first step. By the time all the divisions came under control of the Eighth Army, several of the divisions had placed all their aviation under control of the division aviation officer. (A typical example was the Third Infantry Division, which organized a provisional aviation company under the direct control of the Division Aviation Officer.) The usual problems of supply, personnel, and messing were alleviated by adding the necessary personnel and equipment to perform these tasks. This centralization also focused attention on the additional communications equipment and personnel required to support adequately all types of operational missions.

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During the initial phases of the Korean War, new tactical doctrines were also being developed in the States, particularly with the First Armored Division at Fort Hood, Texas, during the period 1951–52. Throughout the divisional unit training, the various aviation sections operated under the control of the division aviation officer as a company and prepared to support the entire division in the field under combat conditions. An excellent opportunity to test this concept was provided during Exercise Longhorn, the largest maneuver held since World War II. It should be emphasized here that various phases of atomic warfare were integrated into this exercise. This is mentioned now because atomic warfare requires greater coordinated planning and operations between the major combat elements of the division and the aviation section (company). Throughout the exercise, with the armored division operating at extended distances and intervals, the aviation section (company) supported all requirements of the division for a period of sixteen days. General Bruce C. Clarke, then Division Commanding General, summarized this operation by saying, "The Army aircraft is the most valuable single piece of equipment available to the armored commander, and its proper utilization and employment in training and in operations will greatly enhance its value to the commander." An aviation company employed in centralized operations will be of greater value to its commander than the unit aviation section method. This value will be further increased in atomic warfare which requires more flexible organization throughout the division.

Provisional Company

Concurrent with this development in the First Armored Division, interest was growing in Korea for the establishment of a centralized aviation unit at division level. For want of a better name at the time, it was referred to as an aviation company. Of six divisions, five requested permission to participate in a test of a provisional aviation company based on a TO & E published by Eighth Army. It was felt by some unit commanders that this meant the end to effective aviation support. This of course was not the case, and in time these differences of opinion were minimized as more commanders came to understand the operations of the aviation company.

Probably the best method of understanding the concept of an aviation company is to take a good look at the tactical employment of one of these companies. Again it is brought out that although

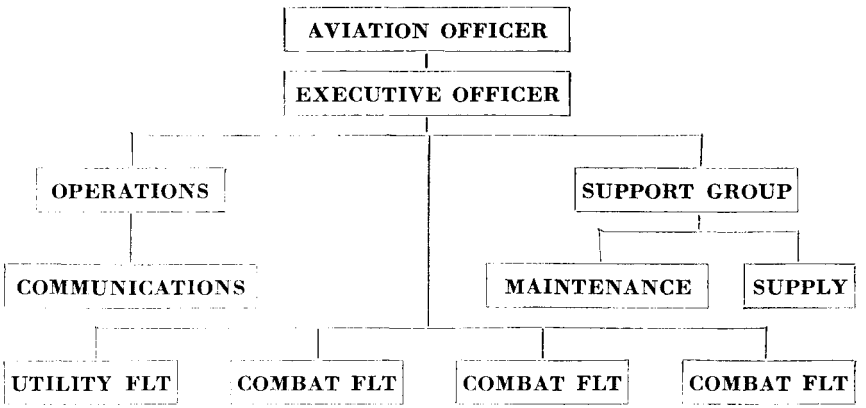
other aviation companies may have had different techniques, the principles of employment will not change basically.

Seventh Aviation Company

The Seventh Aviation Company was activated on 1 August 1953, under a TO & E published by Headquarters Eighth Army, and spent the first two months organizing and equipping. This was no easy matter since personnel and equipment had to be transferred from many units. In addition, certain major items of equipment were to come from outside the division and this took considerable time. However, by the middle of October the company was prepared to begin an intensive training period. This was to be accomplished in addition to providing the normal support to the Seventh Division, then in reserve.

The mission of the company was to support the division and its elements by performing aerial observation, reconnaissance, transportation, and special flights. These were the same missions as were required previously of the unit aviation sections but were imposed on an aviation officer who had supervision of eleven aviation sections not under his direct control. The problem of controlling eleven tactical units from the position of a special staff officer can be easily recognized. Each of these aviation sections was organic to a subordinate element of the division, which meant that each had its own command channels. If all eleven units having organic aviation operated independently on most of their missions, then the unit aviation section organization could be satisfactory. However, the division performs its missions through the coordinated actions of its elements. It follows that the aviation organization should be one which can provide coordinated support and concerted effort depending upon the battle plan for the division. With this organization, the division commander may direct in his operations order that a major portion of the aviation company will be placed in support of those commands making the maximum effort. Retained in the aviation company organization is the ability to break down into smaller supporting units in the event that a command must operate detached from the division. This concept in general forms the basis for the company organization as shown in chart, on page 23.

The organization as shown follows the principles of a normal unit organization. Since the company is the only one of its type in the division, it must provide itself with the necessary technical



support. The operations performed require a normal battalion staff less the personnel and administrative section. All staff members perform staff functions in addition to their flying assignments. The aviation officer, in addition to commanding the unit, is responsible to the division commander as the staff officer for aviation. In effect, he operates in a manner similar to the division ordnance or engineer battalion commander. This is logical since the division commander will normally turn to his top man in the specialist field, and this staff officer cannot control his specialist unit without having command responsibilities vested in him. As a result, the executive officer of the aviation company directs operations in order to free the aviation officer for the performance of his staff functions. With this structure, the aviation officer has his staff to plan actual operations, which enables him to exercise direct control over his combat echelons. It should be emphasized repeatedly that this is a combat support unit and must be organized and equipped to operate as such.

Combat Organization

The combat organization of the company will be affected by the usual factors governing combat operations, i. e., organization for combat of the divisional elements, plan of operations, etc. The presence of three combat flights enables the division commander to provide adequate support to each combat command, and the utility flight can support all other divisional elements. Each combat flight normally supports the same combat command in order to achieve

maximum effectiveness. In general, the organization for combat should be in as few flights as possible consistent with the ability of the company to fulfill its assigned missions. Such centralized organization permits economy of effort, simplifies technical support, and insures a higher percentage of operational aircraft. Aviation is particularly suited to centralized operations because of its extreme flexibility in action. However, rapidly changing tactical situations and poor terrestrial communications may require operation in several flights so as to enable commanders to obtain maximum aviation support within the time limits imposed. Availability of airstrips, extreme lateral distances between elements of the division, and passive defense against enemy air capabilities are also considerations which may affect the company's organization for combat. The threat of atomic attack may require the company to operate out of at least three airstrips so that one atomic weapon will not destroy a major portion of the unit. This dispersion will not affect the operations of the company because in this type situation a combat flight will normally be located in the near proximity to its supported combat command post. The flexibility inherent in an aircraft properly controlled with excellent communications makes dispersion no serious problem.

During combat operations when the aviation company is functioning under centralized control, the employment of the company is controlled by specifying the organization for combat and by assigning priorities of missions in division operation orders. The aviation officer determines this employment after receiving priorities from the division G–3. The aviation officer then assigns the specific missions to the combat flights through his operations officer. Actual operational control of aircraft assigned to artillery and surveillance missions is exercised by division artillery (FSCC), and for reconnaissance, air cover, and command control type missions by the commander of the supported unit. The aviation company will normally monitor all missions to insure effective support.

When any flight of the company is detached and in support of or attached to a unit isolated from the division either by mission or location, the functions of control and coordination are performed by the flight commander in coordination with the commander being supported. This association can be compared very suitably with that of the artillery battalion commander to the combat commander, and will normally apply when the combat flights are operating out of strips adjacent to the combat command post.

Flexibility

All of the flexibility inherent in the operations of the aviation company is keyed to the excellent communications means which are available. Aircraft radios are integrated with the ground control radio equipment of the supported unit and that of the aviation company. In any type of tactical support, flexible communications coupled with adequate liaison forms the framework for success in battle. This is particularly true with the operations of an aviation unit. The communications system of the aviation company is based primarily on the use of aircraft radios, both VHF and FM sets, and the standard series of ground radios, including FM and AM. Radios authorized the aviation company must enable it to support any unit of the division with voice communication. This must be a normal capability, and this flexible means, which provides radio relay, is even more important when one considers the greater dispersion required in future combat operations. It is imperative that the company be furnished all necessary equipment to effect continuous communications.

Summary

This in general covers the operations and employment of a standard aviation company. The Seventh Aviation Company in Korea was employed throughout its test period in the manner described. It is emphasized that through this centralized control all of the factors of personnel, administration, and logistics were simplified for sustained combat operations. Operationally, the Seventh Aviation Company clearly demonstrated its ability to furnish readily effective aviation support to the division and its subordinate units, while at the same time the standards of maintenance, administration, and supply continued to improve over those employed in the old method of unit aviation sections.

The flexibility provided by the company organization enabled the Division Commander to displace any portion of the company anywhere in the division sector rapidly and efficiently. Mobility of the company on the ground was such that the entire company could be displaced in a short time using only organic transportation available within the company.

The aviation company will always be able to maintain a greater number of operational aircraft utilizing centralized operations than when operating otherwise. This method affords maximum utilization of aircraft and better maintenance. (*Continued on page 29*)

OPERATION EMERGENCY

Captain Weyman S. Carver, *Artillery*

The views expressed in this article are the author's and are not necessarily those of the Department of The Army or of The Army Aviation School.—The Editor.

It is a beautiful day with unlimited visibility and the bluest of blue skies curving over the top of your canopy. The air is as smooth as clear ice and the engine is purring like a kitten full of milk. You have your feet on the floor, a couple finger tips on the stick, and are languidly smoking a cigarette. This is going to be a good weekend. The fish are biting at Clearwater Lake. You glance over your shoulder at the fishing gear which you have stowed in the back, then take another deep drag on your cigarette. Living is a pretty good thing.

Like a cymbal crashing in the middle of a waltz, the purring of the engine changes to a vibrating cough, then some pows and bangs as the tach needle bounces back and forth, a couple chugging gasps and silence!

You stare uncomprehendingly as the nose begins to drop and involuntarily pull back on the stick to get the nose up. You hear the silence broken only by a slight whistle of wind. Realization hits like a third degree spotlight. Engine failure!

No! Frantically, you move the throttle back and forth. Silence! You mentally insist that such a thing cannot happen. You have hundreds of hours and this has never happened except in practice when the engine was still ticking over. You sit frozen with the stick against the backstop and the throttle bent forward. A slight shudder of your ship and lightness in the seat of your pants jars you into action. You are stalling and the nose is falling through. Your first instinct is to hold the stick back, then you begin thinking again.

You relax the back pressure on the stick. This is it, a forced landing. You stare at the instruments and they seem like alien things, meaningless dials with jiggling needles. Forced landing procedure? You have not given it much thought since you got your private ticket.

Establish a normal glide!

You glance at the air speed indicator and note the needle is pushing the red line. Slowly you ease back on the stick and settle the needle on the normal power-off gliding speed. You notice that you still have almost three thousand feet although you have lost several hundred feet before starting your forced landing procedure. You feel relieved and extravagant with so much altitude.

Cockpit procedure!

You brighten. There is still a chance. There are several things which you can try that might start the purr again.

Gas!

Is the gas turned on? You look at the switch. Yes, it is on but maybe it is on a dry tank. You quickly switch to the other tank. No change. You check the mixture control to see that it is full rich. No change. You turn the fuel pump on. Still no change.

Ignition!

You check the mag switch in hopes that all the trouble has been caused by some diabolical gremlin flipping your mag switch off. No such luck. It is on both and your master switch is on although you know that it is not doing you any good. There is nothing left to check but you stare around the cockpit hoping to find something you missed that will start the purr again. The altimeter is unwinding. The wind is a low whistle as you glide toward the ground. You go over the procedure again. Still no purring engine.

You have done all you can and now, for better or worse, you are going to land. Then you notice the radio and grab for your mike. "Mayday! Mayday! Mayday!" you chant. "This is ——" and you give your identification. "I have engine failure." You repeat this four or five times, then realize that you must give someone a chance to answer.

"Station calling Mayday, this is podunk range. What is your position?" This comes in a quiet, time-of-day, tone of voice.

You look outside and there is nothing but woods, plowed fields, and a few pastures. Where are you? You are in a slight bank but beyond that you don't know.

"I'm near a farmhouse and a big rock pit," you state like you were giving six place coordinates. You notice the altimeter again. Less than two thousand feet left and you forget the radio and its time-of-day voice. You get your eyes out of the cockpit in a hurry looking for a landing spot. Wind direction and velocity? You twist your neck around and see a little brush fire near the farm-

house. By the direction the smoke is blowing, you see that the wind is coming from the south and it looks like a stiff breeze. Now for the field itself. There is one of the most beautiful pieces of terra firma you have ever laid eyes on not far from the burning brush pile. It looks like it is a mile square. You spiral down toward it almost licking your lips. Nobody could miss that field. As you stare at it, goose pimples start playing leap frog up your backbone. How could old lady Fate do such a thing to you? First, engine failure, and now, covering the perfect landing field are furrows. They are not big furrows but furrows nevertheless, and they run crossways the wind or the wind is blowing across them. No matter how you cut it, you have to land crosswind or cross furrows. It is a field with a built-in ground loop, noseover, or both.

About a thousand feet left.

You are on the west side of the big field headed north. Under the left wing is another field, a pasture. It is not more than a hundred yards wide, and although it is long enough to land on, it is going to take some careful doing. The wind is blowing straight down it and it looks smooth.

You pick the spot on the ground in the first third of the north end of the field where you hope to touch down. Fortunately, there are no barriers except the fence around the field. You decide to make a 180 degree side approach pattern. By flying a normal pattern, you can judge the wind better. It looks like you are high, so you turn away from the field. But a few seconds later you decide to play it cagey. The altitude above you is not any good, and if necessary, you can always lose altitude at the last minute, so you angle back toward the field.

You keep the field in sight to your left and it seems to be sliding behind pretty fast. Now is the time for the base leg. Gently you bank over to the left. You are calm now. It is just like you used to practice. You have your field. You can see the spot where you plan to hit. There are no more decisions to make, you think with relief. Then you note that you are sliding away from the field. You are not crabbing enough to correct for the wind. You turn a little more toward the field. A few seconds later, you turn on the final approach.

You are high, very high, and the field is coming up fast. You decide on a couple of S turns on the final approach to kill some of the altitude. You turn off the gas and all switches. The fence slides under you as you ease back on the stick. There is a wham as you

hit slightly wheels first. You bounce, hold back on the stick, and wham again as you hit the second time. This time it sticks and you jounce along. You lightly apply the brakes until you come to a stop not much over halfway down the field.

There is silence, lots of silence. Even the wind has stopped whistling. You open up and climb out. You walk away from the ship a few paces and look at it. You light a cigarette and notice that the backs of your hands are wet with perspiration. You take a deep breath and you feel good. You feel better than you have ever felt. You almost laugh out loud with the good feeling. You have a confidence that you never had before. In a rare emergency, that of complete engine failure, you have set a ship down and you did a number one job of it. Or did you?

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(*"CENTRALIZED OPERATIONS" continued from page 25*) This centralization in no way will interfere with effective combat support being provided all elements of the division.

The test of the aviation companies in Korea was another important phase of the development of the tactical doctrine of the employment of Army aviation. The company concept was proven effective in a static type of warfare. It was proven effective during the mobile phases of Exercise Longhorn in 1952 at Fort Hood. As this is being written, another phase of the development of the aviation company is being unfolded in the Combat Aviation Companies of the Third Infantry Division and the First Armored Division. Those companies will be tested to determine their ability to support combat operations under atomic war conditions. This writer is firmly convinced that the aviation company, if organized and equipped, trained and employed, in accordance with proven principles, will establish itself as the best possible aviation organization in the standard American division.

ENGINE ICE AND AIR

S. K. Baker

The views expressed in this article are the author's and are not necessarily those of the Department of The Army or of The Aviation School.—The Editor.

One of the most important and probably the least considered part of engine installation is the carburetor and induction system.

On the Bell Model 47 (HTL of H–13) helicopter, the engine will consume over 50 barrels of air per minute. This air flows through the induction system at a speed close to 60 miles per hour. At the same time the carburetor will mix with this air approximately a quart of gasoline in order to provide the proper fuel/air ratio to the engine.

Power output is almost a direct function of airflow; hence any item that reduces the airflow will reduce the power output of the engine. The normal means of reducing the airflow is the throttle. However, numerous other items can also affect the amount of air which flows into the engine when operating at or near full throttle. A few of these items are: A dirty filter, a partially collapsed induction tube, dirt, lint, etc., on the backfire screens, and operating the engine with too much preheat. Of these items, preheat is the only one under the direct control of the pilot when in flight.

Air Temperature

Engine power output will change with carburetor air temperature at a rate of one percent of power for each ten degrees Fahrenheit, 60 degrees is considered standard. Thus, with a carburetor air temperature of 100 degrees Fahrenheit (38° C), the power obtained is four percent less than that shown on the operating curves. The major contributing factor to this loss is weight airflow. Carburetor metering is also based on weight airflow. At sea level a pound of air at 60 degees Fahrenheit (15° C) occupies approximately 13 cubic feet whereas a pound of air has over 10 percent more volume at 100 degrees Fahrenheit.

From the above, it would appear that the colder the air entering the carburetor the better the engine would perform. While this is true, certain factors must not be overlooked. Two of these factors are engine stumbling and induction system icing. Both of these can seriously affect engine operation.

Engine stumbling is a term used for engine hesitation or faltering. It is caused primarily by fuel not vaporizing sufficiently prior to ignition to give complete combustion. As fuel is introduced into the air in the carburetor, a lowering of the air temperature takes place as the fuel is vaporized. This reduction in temperature is usually 30–50 degrees Fahrenheit. If the incoming air is too cold, the fuel cannot vaporize properly. Thirty-five degrees Fahrenheit (1.7° C) is the recommended minimum air temperature to prevent engine stumbling.

The yellow arc on the carburetor between 14 and 90° Fahrenheit (−10 and +32° C) is the caution range where possible icing may occur. When and where induction system icing can occur is a much discussed subject. Ice formation within the induction system is often a potential hazard of engine operation. It is difficult to approximate the frequency of this condition. The more advanced cases of icing which cause serious malfunctioning of the engine are comparatively few in number, but they cause a great deal of concern and should be absolutely eliminated.

Types of Ice

Ice may be formed in the induction system by three different processes, which are classified as follows:

1. ***Impact Ice*** is formed from water that originally existed in the atmosphere as snow, sleet, or subcooled liquid and includes

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that which is formed from liquid water impinging on surfaces that are below 32 degrees Fahrenheit (0° C). The most dangerous impact ice is that which may form on the air filter.

2. ***Throttle Ice*** is formed at or near the throttle when it is in a partly closed position, due to the cooling effect by the restricted flow area. This ice may form at carburetor air temperatures as high as 35 degrees Fahrenheit (1.7° C).

3. ***Fuel Ice*** is formed because of the cooling effect of the fuel evaporating after it is introduced into the air stream. This ice probably occurs most frequently in actual operation because it may form at carburetor air temperatures considerably above 32 degrees Fahrenheit (0° C).

As mentioned before, most of the heat necessary to evaporate the fuel is taken from the air, which causes it to drop in temperature. Fuel ice may affect fuel/air ratio by interfering with the fuel flow at the fuel nozzle or the quantity of fuel/air mixture to individual cylinders by forming barriers or dams in the intake manifold. Under certain conditions of high humidity, this ice will form with carburetor air temperature as high as 80 degrees Fahrenheit (25° C).

Indications

Indications of icing conditions in the order of probable perception to the pilot are as follows:

1. Decrease in manifold pressure which is due to restriction of induction passages with consequent loss of airflow and power. Changes in fuel/air ratio occur and cause a rough-running engine.
2. Sticking throttle valve.
3. Surface icing of the helicopter.

Removal

Removal of ice already formed is best accomplished by the use of full preheat. If this remedial action has not been delayed, it is a matter of seconds until the ice is removed. The preheat capacity can be increased by applying more power.

Prevention

By following the suggestions outlined below, optimum engine performance can be expected:

1. Keep the air filter clean and the induction system tight. A clogged or dirty filter will reduce airflow which in turn reduces the power output. Normal full throttle manifold pressure is between 27¼ and 28 inches for the 0–335 engine near sea level. If this manifold pressure cannot be attained, the filter should be cleaned and the induction system checked.

2. When operating in direct or cold air, the carburetor temperature rise should not be greater than 18 degrees Fahrenheit (10° C), over outside air temperature. The normal rise is usually less. However, if this is exceeded the preheat valve should be checked for proper operation, seating etc., and the induction tube checked for separation of laminations or location. At least six inches clearance from the exhaust manifold is required to prevent any appreciable rise in induction air temperature.

3. When flying in low humidity air, keep the carburetor air temperature as low as possible but not below 35 degrees Fahrenheit (1.7° C).

4. When flying in high humidity air, caution should be used to prevent icing. If icing is suspected, note RPM and manifold pressure. Then without changing either, apply full preheat for approximately 15 seconds and return to original setting. If RPM and manifold return to original setting and there is no change in engine operation, such as roughness, etc., it can be assumed that ice was not forming.

This article has been written in order to give a better understanding of the induction system and to help improve overall operation. While it is true that satisfactory operation can be obtained at lower temperatures than the desired range as shown on the gauge, it is assumed that the pilot will use extreme caution when operating outside of the limits recommended. A pilot should not operate his engine outside of the recommended limits without competent engineering advice concerning the factors involved under the given weather conditions.

(*"FLYING AND MEDICATION" continued from page 14*) It is not intended to make self-styled physicians out of pilots. Neither is it intended to degrade the medical officer or physician who is not concerned with aviation medicine. This is an effort to bring to the attention of all concerned specific measures which are vital to promoting and preserving flying safety.

Grey Hare Says

"Close the Door, Richard!—Gently"

To the tune of one hundred thousand dollars, a door slammed, the panic button was pressed, and an H–25 lay on its right side.

The pilot was returning from a normal mission and started his final approach at approximately 300 feet altitude. Suddenly the cargo compartment door slammed shut. The pilot, greatly disturbed and not knowing what had caused the noise, continued his approach for a landing. He lost control of the aircraft on the landing and contact with the ground was made at a 45 degree angle. The aircraft skidded on its right gear for 90 feet, then rolled on its right side.

There is no doubt that unusual noises in an aircraft will cause a pilot to be perturbed. It is felt that the pilot in this case certainly went to the extreme when a simple thing like a cargo compartment door slamming in an H–25 results in $100,000 damage. All units using this type aircraft should thoroughly brief their pilots concerning the loud noise made by this door when it slams. In the case mentioned here, no injuries were involved, even though the cost was very great.

Too Low, Too Slow, Too Bad

This is a case of too low, too slow, too bad, which resulted in fatalities for the pilot and passenger. The pilot took off in an L–20

from a field with an elevation of 4,670 feet and headed into a pass with an elevation of 8,300 feet. The aircraft passed over a town five miles from the airport, at a very low altitude. The altitude could not be determined exactly, but the inhabitants of the town stated that the aircraft was much lower than normal air traffic. When the aircraft was within one mile of the end of the pass, it was seen to be approximately 1,500 feet below the top. At this point it was impossible for this type aircraft to clear the pass while continuing on course. The pilot, apparently realizing this, started to turn away from the pass at a point where the terrain rises very abruptly. During the turn, the left horizontal stabilizer and the left elevator cut off a treetop approximately 12 feet from the ground. This caused the aircraft to veer to the left, striking the forward slope of an embankment.

The error in judgment on the part of the pilot in entering the pass with insufficient altitude to clear the top was a fatal one.

Investigation of this accident revealed no engine failure or material failure. The pilot was experienced and evidently believed he could execute the turn or clear the top of the pass. It is noted that upon take-off, he made no effort to gain sufficient altitude but remained at a low altitude while flying over the nearby town.

A good rule for us to remember is to stay a "thousand feet" above the highest terrain in the area in which we are flying.

Zero or Eighty Mph?

In reviewing H–13 accidents, a very interesting case was found that occurred last summer in which a pilot was making a night evacuation flight. He was flying along the coast over the water and using a sandy beach for a reference. Suddenly he lost visual contact with the shoreline. Upon losing contact, he turned on his landing lights for a moment and found that he had encountered haze. He flipped his lights off but night vision had been lost due to the landing lights. As his night vision returned, he stated that he saw a hill directly in front of him. His immediate reaction was to reduce his forward speed, as his air speed indicator showed 80 miles per hour. At this time, he experienced a loss of power and rpm. In attempting to effect a recovery, he lost 500 feet altitude. Again the landing lights were turned on and he observed that he was moving backwards just prior to crash landing on a large boulder on the water's edge.

The pilot in this case had 143 hours in the H–13 and a total flying time of 567 hours. The same error in reading his air speed

indicator which this pilot encountered has been made many times by more experienced pilots. It is a situation which occurs most often at night or on instrument conditions. All H–13 pilots should realize that when they are indicating 80 miles per hour, the needle is in the same position as when indicating zero miles per hour. It should also be noted that when forward motion decreases, a loss of rotor rpm may be expected. The pilot in this case, assuming that he was flying 80 miles per hour, proceeded to back his helicopter into the ground in his attempt to correct a non-existent condition.

A good point to remember is, when in doubt as to whether you are travelling zero or 80 miles per hour, INCREASE YOUR FORWARD SPEED SLIGHTLY.

There is some question in the minds of many of us who reviewed this report as to why a pilot with 143 hours rotary-wing time is out on a night mission in mountainous terrain and on instruments. It is realized that the urgency of some missions might take pilots out in such conditions, but it is felt that the most experienced personnel should be called upon to perform hazardous missions of this type. Fortunately our pilot escaped without injury.

Mechanic's Merry–Go–Round

Here is an accident in which pilot error as such is not a factor. A mechanic was performing a pre-flight inspection on an H–13, and, much to his amazement, things besides the main rotor began spinning.

The mechanic had made a magneto check at 2,700 rpm, then revved up to 3,000 rpm to check the free wheeling unit. At this point, he chopped the throttle abruptly to split the needles, and as he did, the anti-torque effects caused the entire helicopter to begin rotating counterclockwise. The mechanic became confused, pushed left pedal instead of right, and increased the velocity of his merry-go-round.

This accident which cost several thousand dollars would not have occurred had the helicopter been tied down and if the pitch stick had not been allowed to move up to the point where the helicopter was light on its skids.

All mechanics must be thoroughly briefed on proper procedures for run-up, and proper tie-down facilities should be provided for all helicopters. Accidents like this cost thousands of dollars when adequate tie-down positions cost only a few dollars.

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ARMY AVIATION DIGEST

EDITOR-IN-CHIEF

Captain Weyman S. Carver

The printing of this publication has been approved by the Director of the Bureau of the Budget, 13 August 1954.

The ARMY AVIATION DIGEST is an official publication of the Department of the Army published monthly under the supervision of the Commandant, Army Aviation School. The mission of the ARMY AVIATION DIGEST is to provide information of an operational or functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine, and other related data.

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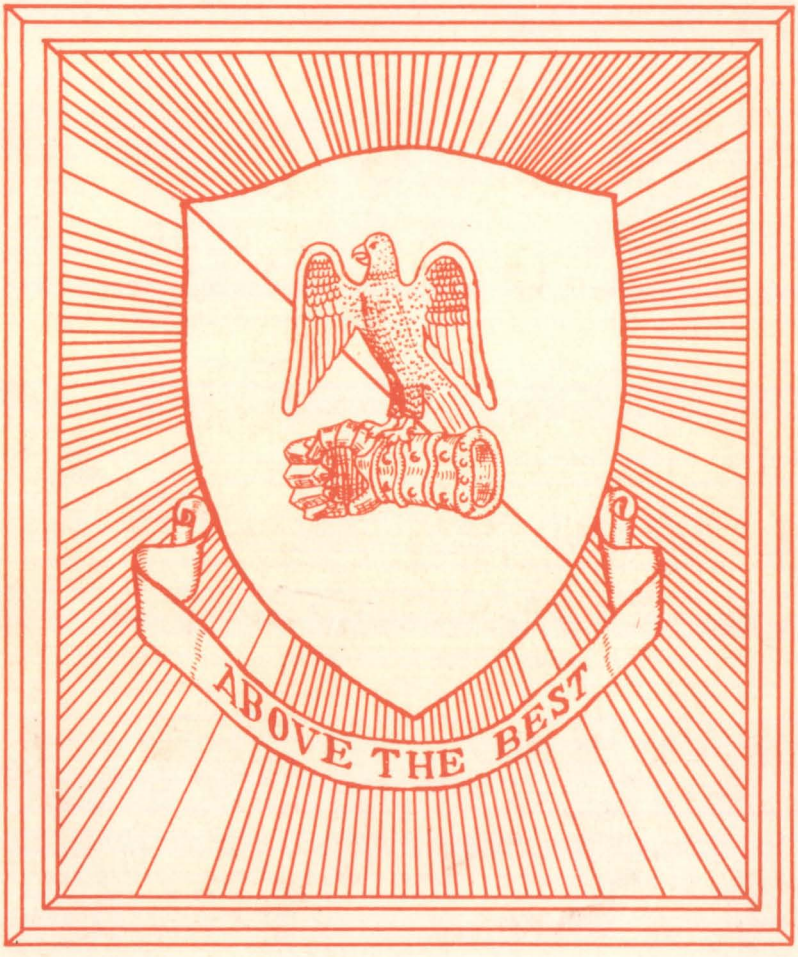
Ft & Cp (ConUS) (1)
Ft & Cp (ConUS) M/F Librarian (1)

NG: State AG (2).

USAR: None.

Unless otherwise noted distribution applies to ConUS and Overseas.
For explanation of abbreviations used see SR 320-50-1.



ARMY AVIATION SCHOOL CREST

When reproduced in full color, the colors red, blue, and yellow are used in the crest to indicate representation of all branches of the Army in The Army Aviation School. The school's aviation training mission is symbolized by the perched falcon denoting the art of falconry with its patient training of swift, keen birds for hunting. The mailed fist depicts the military ground arm which exercises the control, training, and direction of the flight.